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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/710,827	11/13/2000	Ravi Chandran	117274/US03	6232
23446	7590	03/29/2004	EXAMINER	
MCANDREWS HELD & MALLOY, LTD 500 WEST MADISON STREET SUITE 3400 CHICAGO, IL 60661			JAMAL ALEXANDER	
			ART UNIT	PAPER NUMBER
			2643	
DATE MAILED: 03/29/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/710,827

Applicant(s)

CHANDRAN ET AL.

Examiner

Alexander Jamal

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on November 13, 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 34-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3.5</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. **Figure 1** should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 34-42** rejected under 35 U.S.C. 102(b) as being anticipated by Applicant's

Background in the specification.

a. **Claim 34:** Applicant's background (Fig. 1, Specification page 3 lines 3-20) discloses that there are known communication systems adapted to transmit communication signals (including speech signals and tonal components), and maintain the tonal components in the presence of noise, the system comprising:

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- i. An input is inherent to a communication system for the purpose of receiving a communications signal.
 - ii. A processor (Specification page 5 line 16 to page 6 line 3) that detects a first input tonal or speech component and generates a second tone or speech component that has a frequency related to the first input tone (the input tone with reduced noise or different gain).
 - iii. The second signal that is generated is responsive to the first input signal, and is transmitted via an output (Specification: Fig. 7 Page 7 line 13 to Page 8 line 15).
- b. **Claims 35-38:** The input tonal components may be DTMF, facsimile, dialtone, or busy signals (Specification page 3 lines 10-15), or any other telephone line signaling tones.
- c. **Claim 39:** The input tonal component is processed in blocks of samples (Specification page 4 line 19 to Page 5 line 12) to detect the presence of of the input tonal component after processing a number of blocks (Specification page 7 line 7 to Page 8 line 5).
- d. **Claim 40:** The processor will output the input tonal component for a period of time, and will suppress the tonal component in the output signal for a period of time after the first period of time (while it is adapting to the tonal component) (Specification Page 7 lines 13-20).

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e. **Claim 41:** The processor may comprise a dsp (Specification page 5 line 16 to page 6 line 3) that executes software (software being inherent to the DSP for the purpose of providing instructions to the DSP).

f. **Claim 42:** The system is made to recover the tonal component (such as a DTMF signal). The second tonal component (output signal) would inherently have the substantially same frequency as the first tonal component for the purpose of accurately recovering the signal.

3. **Claims 48-55** rejected under 35 U.S.C. 102(b) as being anticipated by Applicant's Background in the specification.

a. **Claim 48:** Applicant's background (Fig. 1, Specification page 3 lines 3-20) discloses that there are known communication systems adapted to transmit communication signals (including speech signals and tonal components), and maintain the tonal components in the presence of noise, the system following a method comprising:

- i. Receiving the communications signal is inherent to a communication system by definition.
- ii. Detecting a first input tonal or speech component and generates a second tone or speech component that has a frequency related to the first input tone (the input tone with reduced noise or different gain) (Specification page 5 line 16 to page 6 line 3).

- iii. Generating a second tonal component that is responsive to the first input signal, and is transmitted via an output (Specification: Fig. 7 Page 7 line 13 to Page 8 line 15).
- b. **Claims 49-52:** The input tonal components may be DTMF, facsimile, dialtone, or busy signals (Specification page 3 lines 10-15), or any other telephone line signaling tones.
- c. **Claim 53:** The input tonal component is processed in blocks of samples (Specification page 4 line 19 to Page 5 line 12) to detect the presence of of the input tonal component after processing a number of blocks (Specification page 7 line 7 to Page 8 line 5).
- d. **Claim 54:** The method further comprises outputting the input tonal component for a period of time, and suppressing the tonal component in the output signal for a period of time after the first period of time (whenever it is adapting to the tonal component) (Specification Page 7 lines 13-20).
- e. **Claim 55:** The system is made to recover the tonal component (such as a DTMF signal). The second tonal component (output signal) would inherently have the substantially same frequency as the first tonal component for the purpose of accurately recovering the signal.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 43-44** rejected under 35 U.S.C. 103(a) as being unpatentable over (Applicant's Specification as applied to claim 34 above, and further in view of Vaseghi ("Advanced Signal Processing and Digital Noise Reduction", Ch. 9).

- a. **Claims 43/44:** Applicant's Background in the specification discloses applicant's Claim 34.

However it does not mention maintaining the input tonal component by extending the component and generating the output signal such that the second tonal component (output) has a phase and frequency that is derived from and substantially identical to those of the input tonal component.

Vaseghi discloses that the input tonal component (input signal) may be maintained by extending the signal (by buffering and overlapping the signal: Page 256) and using that signal to remove the distortions (suppression) caused by the subtraction of the noise component by the processor. As such the output tonal component will have a substantially identical frequency and phase as the input tonal component (Page 257). He

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also teaches that, in speech recognition (which would comprise any signaling tonal components on a phone line) the distortion (suppression) caused by noise subtraction may cause a deterioration in performance (ie. the detection of a DTMF signal). It would have been obvious to one of ordinary skill in the art at the time of this application to implement Vaseghi's procedure to the device disclosed in the applicant's background for the purpose of increasing the performance of the communications system.

4. **Claims 45-47** rejected under 35 U.S.C. 103(a) as being unpatentable over (Applicant's Specification as applied to claim 34 above, and further in view of Vaseghi ("Advanced Signal Processing and Digital Noise Reduction", Ch. 9).

a. **Claim 45:** Applicant's Background in the specification discloses applicant's Claim 34. It further discloses that the input tonal component is regenerated, but is suppressed (Specification Page 7 lines 13-20).

However it does not mention maintaining the input tonal component by regenerating the component and generating the output signal such that the second tonal component (output) is maintained for a predetermined period of time.

Vaseghi discloses that the input tonal component (input signal) may be maintained by extending the signal (by buffering and overlapping the signal: Page 256) and using that signal to remove the distortions (suppression) caused by the subtraction of the noise component by the processor. As such the output tonal component will have a substantially identical frequency and phase as the input tonal component (Page 257). He

also teaches that, in speech recognition (which would comprise any signaling tonal components on a phone line) the distortion (suppression) caused by noise subtraction may cause a deterioration in performance (ie. the detection of a DTMF signal). The output tonal signal is maintained for a predetermined duration (the duration determined by the input signal). It would have been obvious to one of ordinary skill in the art at the time of this application to implement Vaseghi's procedure to the device disclosed in the applicant's background for the purpose of increasing the performance of the communications system.

b. Claim 46: The system may examine a portion (block of samples) of the input signal (such as in the window method described by Vaseghi Page 252). The output signal is commenced during a block that is displaced from the input tonal component samples block (first block) by a predetermined number of blocks. The number of blocks being determined by the processing or noise subtraction algorithm delay (Page 256-257).

c. Claim 47: Since the output signal will have identical phase and frequency as the input tonal component, it will continue after the termination of the input signal by a duration proportional to the predetermined number of block (processing delay).

5. Claims 56-57 rejected under 35 U.S.C. 103(a) as being unpatentable over (Applicant's Specification as applied to claim 48 above, and further in view of Vaseghi ("Advanced Signal Processing and Digital Noise Reduction", Ch. 9).

- a. Claims 56-57:** Applicant's Background in the specification discloses applicant's Claim 48.

However it does not mention maintaining the input tonal component by extending the component and generating the output signal such that the second tonal component (output) has a phase and frequency that is derived from and substantially identical to those of the input tonal component.

Vaseghi discloses that the input tonal component (input signal) may be maintained by extending the signal (by buffering and overlapping the signal: Page 256) and using that signal to remove the distortions (suppression) caused by the subtraction of the noise component by the processor. As such the output tonal component will have a substantially identical frequency and phase as the input tonal component (Page 257). He also teaches that, in speech recognition (which would comprise any signaling tonal components on a phone line) the distortion (suppression) caused by noise subtraction may cause a deterioration in performance (ie. the detection of a DTMF signal). It would have been obvious to one of ordinary skill in the art at the time of this application to implement Vaseghi's procedure to the device disclosed in the applicant's background for the purpose of increasing the performance of the communications system.

- 6. Claims 58-60** rejected under 35 U.S.C. 103(a) as being unpatentable over (Applicant's Specification as applied to claim 48 above, and further in view of Vaseghi ("Advanced Signal Processing and Digital Noise Reduction", Ch. 9).

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a. **Claim 58:** Applicant's Background in the specification discloses applicant's Claim 48. It further discloses that the input tonal component is regenerated, but is suppressed (Specification Page 7 lines 13-20).

However it does not mention maintaining the input tonal component by regenerating the component and generating the output signal such that the second tonal component (output) is maintained for a predetermined period of time.

Vaseghi discloses that the input tonal component (input signal) may be maintained by extending the signal (by buffering and overlapping the signal: Page 256) and using that signal to remove the distortions (suppression) caused by the subtraction of the noise component by the processor. As such the output tonal component will have a substantially identical frequency and phase as the input tonal component (Page 257). He also teaches that, in speech recognition (which would comprise any signaling tonal components on a phone line) the distortion (suppression) caused by noise subtraction may cause a deterioration in performance (ie. the detection of a DTMF signal). The output tonal signal is maintained for a predetermined minimum duration (the duration determined by the input signal). It would have been obvious to one of ordinary skill in the art at the time of this application to implement Vaseghi's procedure to the device disclosed in the applicant's background for the purpose of increasing the performance of the communications system.

b. **Claim 59:** The system may examine a portion (block of samples) of the input signal (such as in the window method described by Vaseghi Page 252). The output signal

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is commenced during a block that is displaced from the input tonal component samples block (first block) by a predetermined number of blocks. The number of blocks being determined by the processing or noise subtraction algorithm delay (Page 256-257).

c. **Claim 60:** Since the output signal will have identical phase and frequency as the input tonal component, it will continue after the termination of the input signal by a duration proportional to the predetermined number of block (processing delay).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Jamal whose telephone number is 703-305-3433. The examiner can normally be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis A Kuntz can be reached on 703-305-4708. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9315 for After Final communications.



DUC NGUYEN
PRIMARY EXAMINER

AJ
March 18, 2004